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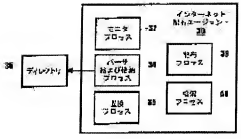
(54) INTERNET MAIL DISTRIBUTION AGENT WITH AUTOMATIC CACHE STORAGE FOR ANNEX-TO-FILE

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a method which can be implemented in existent SMTP- based client server constitution and prevents copies of an annex-to-file from being stored by replacing reference to and the position of the annex stripped off a message in the original electronic mail and transferring this electronic mail to a recipient.



SOLUTION: An Internet mail delivery agent 30 includes a 1st process 32 which monitors incoming electronic mail as to an annex-to-file. A 2nd process 34 analyzes the annex-to-file and stripes the annex meeting the given criterion of a policy. The 2nd process 34 controls even the storage of the removed annex- to-file at a given location of an accessible storage device 35. Further, a 3rd process 36 is included which replaces object reference such as a link for discriminating a URL in the electronic mail at the position of the deleted annex. A 4th process 38 delivers the electronic mail, altered so as to include the URL and message, to the original recipient.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] Generally this invention relates to the information distribution by the computer network. Specifically, this invention relates to the technique for the post of these attachments to an accessible location by removal of MIME (Multipurpose Internet Mail Extension) from an electronic mail message, and other attachments, and the target electronic mail recipient.

[0002]

[Description of the Prior Art] The electronic mail is the very best correspondence procedure for the whole world and the general public of business. In the usual enterprise environment, mail servers (SendMail of UNIX (trademark) etc.) store an arrival-of-the-mail electronic mail in a local file system, and have the local mail distribution agent (with a UNIX system, it is usually ... /bin/mail) who supplies an end user widely through POP, IMAP, or a command line program. Such an agent logs in to an electronic mail message, and offers only the fundamental function to copy the message to an e-mail spool of a client computer.

[0003] The attachment of the form of the large binary file which is a MIME type format of a sound clip, a movie clip, etc. is often usually contained in the usual electronic mail message. These large electronic mail file attachments have caused some difficult matters frequently at the time of reception by the mail server. When it follows, for example, the electronic mail message is addressed to many recipients, a local distribution agent only inserts the copy of a file in each recipient's mail box. Although this processing consumes most quantity of a storage area, this is wasteful and causes whether a file system is received and the becoming heavy burden.

[0004] One of the attempts coping with this problem is indicated by the U.S. Pat. No. 5781901 specification. In this patent, an electronic mail attachment is not distributed to

an expected recipient. The sender which is not so and desires transmission of an electronic mail posts an attachment for a local web server relatively to a server. The network address of a meaning is included in an attachment. Then, a transmitting person makes demands on a recipient for an electronic mail option, and a recipient answers the demand and provides a transmitting person with the electronic mail page which can be constituted. A transmitting person supplies a message and a URL pointer by the web page of the HTML base transmitted to an addressee. This URL points at the network address of the aforementioned meaning. A recipient can take out an attachment by navigating to the URL.

[0005] Although a technique given in a U.S. Pat. No. 5781901 specification prevents two or more transmission and storing of an electronic mail attachment, this technique has two or more disadvantageous profits. A dedicated server must be arranged [1st] for attachment storing, and this server must be arranged comparatively near the transmitting person, in order to prevent unnecessary network traffic while storing a file attachment. Furthermore, at this technique, if a transmitting person has to browse a recipient's home page or other websites through a web browser first and does not choose a "electronic mail transmitting" option after that, ******** and this option must be made usable by a recipient's home page. When a recipient does not offer this function, the attachment electronic mail system (attachment-by-reference e-mail system) by reference given in a U.S. Pat. No. 5781901 specification cannot be carried out. Furthermore, in order to use the system of a U.S. Pat. No. 5781901 specification, a transmitting person has to choose intentionally, in order to use the functionality. Therefore, for a transmitting person, this technique cannot be enforced transparent but this [its] is disadvantageous.

[0006]

[Problem(s) to be Solved by the Invention] It can carry out in this technical field within the existing SMTP base client-server configuration, and the need of offering the technique which prevents storing of two or more copies of an electronic mail file attachment exists in it. This invention solves this problem.

[0007]

[Means for Solving the Problem] According to this invention, an electronic mail message is scanned about MIME or the file attachment of other forms. Alternatively, such an attachment is stripped from a message and cache storage is carried out in an accessible location. If wished, an attachment is compressible before storing. Then, the reference (for example, link) and the location to an attachment are permuted within the original electronic mail, and this electronic mail is transmitted to an expected recipient. A

recipient chooses reference from a browser or other rendering engines preferably, when acquisition of an attachment is desired. Then, compression discharge is carried out if needed and an attachment is supplied to a recipient.

[0008] Therefore, when the electronic mail which has a large file attachment is distributed to two or more recipients in an enterprise (or outside of an enterprise), it is desirable that only one copy of a file attachment is maintained in an accessible location. In this technique, when the same attachment is addressed to two or more recipients, the amount of a required file system storage area becomes less considerably.

[0009] It is desirable to determine whether to use the polish which a manager controls and carry out the cache storage of the given attachment. It can follow, for example, can be depended for a polish on the title or other polishes of the given selection sequence about the attachment of the number of the recipients of a message who have a file attachment, the size of a file attachment, the MIME type of a file attachment, and a specific type, the keyword identified by refer to [of an attachment] the title, and an attachment. If wished, a polish is customizable per a user unit or user group.

[0010] With a desirable operation gestalt, the approach of this invention is enforced as computer programs, such as for example, the Internet mail distribution agent, within a mail server. This functionality can be made into an independent distribution agent, or can be used as the add-on to the existing server program.

[0011]

[Embodiment of the Invention] The known Internet client/server system is carried out in the form shown in drawing 1 . In this system, 1 set of client computer 10a thru/or 10n are connected behind the network fire wall 12 within an enterprise environment. Each client calculating machine has the capacity connected to 1 set of web server 14a thru/or 14n through a network 16 in a known form. Other servers for control of domain name solution, routing, and other control functions are usually contained in a network 16. A network 16 is the Internet, intranet, or other known networks. For this purpose, a suite of programs to obtain the user of a client in the known Internet service including 1 to 1 messaging (electronic mail), one-pair many messaging (notice plate), a file transfer, and web browsing is usually contained in each client. Therefore, the user of the client 18 of the exterior of the network fire wall 12 can communicate with one of the client computers 10 inside a fire wall. The client 18 which are SMTP (Simple Mail TransportProtocol) e-mail clients, such as Lotus Notes, Microsoft Outlook, or a prototype, is contained in a typical client. The client calculating machine 10 of an electronic mail cooperates with a mail server 20 in a known form. The typical mail server 20 is SendMail of UNIX, an arrival-of-the-mail electronic mail is stored in the

local file system 22, and the local (minding POP, IMAP, or command line program) mail distribution agent who supplies an end user widely is contained in this. In the paradigm of the Internet, the network path to a resource (for example, server) is identified by the so-called URL (Uniform Resource Locator).

[0012] The typical mail server 20 is an IBM Netfinity server including the RISC base processor 23, the AIX (trademark) operating system 24, and the mail server program 26. A mail server program is the local mail distribution agent who annotated before. The application programming interface (API) 28 which an application developer provides with the extension for minding the software program containing plug-in, a servlet, and a prototype, and extending or customizing the nucleus functionality can be included in a mail server 20.

[0013] A typical client is the personal computer of the x86 base, the PowerPC (trademark) base, or the RISC base, a notebook computer, the Internet device, or a PABEISHIBU computing device (for example, PDA or a palm computer). In a client, they are IBM(trademark) OS/2 (trademark) and Microsoft. Operating systems, such as Windows (trademark), Microsoft Windows CE, or PalmOS, are contained. Netscape which has a Java virtual machine (JVM) and the support of application plug-in or a helper application in a client as annotated in the top (trademark) The group of the Internet tool containing web browsers, such as Navigator or Microsoft Internet Explorer, is contained. In order to manage an electronic mail communication link, e-mail clients, such as Lotus Notes, Microsoft Outlook, or a prototype, are also contained in a client. It is not necessary to change the existing e-mail client in order to use this invention, so that lower explanation may show.

[0014] As explained briefly in the top, this invention removes a MIME type and other attachments, carries out cache storage, and the new Internet mail distribution agent who prevents that two or more copies of these attachments for 1 set of expected recipients are stored is offered. In the example of illustration, the Internet distribution agent is the program of the standalone version permuted by the conventional mail server distribution agent (for example, UNIX/bin/mail). With the operation gestalt of 1 specification, the agent of this invention is carried out as a servlet it runs on a server. As an alternative, the distribution agent of this invention can be carried out as an accessory of the existing mail server, for example as separate plug-in. Of course, it can be used in any convenient embodiments.

[0015] Drawing 2 is drawing showing the main functional components of the Internet mail distribution agent 30 of this invention. The 1st process 32 which supervises an arrival-of-the-mail electronic mail about a file attachment is included in this agent. The

2nd process 34 analyzes a file attachment according to a given polish, and strips the attachment which meets the given decision criterion of a polish. Following, for example, as for one of such the decision criteria, an attachment's having given size or an attachment will be a given MIME type. The 2nd process 34 also controls storing in the given location of the accessible storage 35 of the removed file attachment. A store 35 can be used as the LDAP directory which has a relational database exchange store although it does not mean becoming restrictive. Instead, a store 35 can be made into a web server. The 3rd process 36 which permutes "refer to [of the link which identifies URL, the image link containing the thumbnail image of a file attachment, or a prototype] the object" in the location of the attachment preferably deleted within the electronic mail is further included in the Internet mail distribution agent 30. The 3rd process 36 can also insert the message for directing the approach of taking out the stored file attachment to a user. The 4th process 38 distributes the electronic mail changed so that URL and a message might be included to a recipient from the first. The 5th process 40 answers selection of URL, takes out the stored file attachment, and supplies an attachment to a recipient. Although these processes may be separate or that may not be right, it is desirable to be supported within a computer, i.e., the random access memory of a mail server.

[0016] As a typical operation gestalt, each of these processes is an instruction set which constitutes a computer program. This program can be carried out by Java as a servlet which can be performed within the processor which makes it run a given operating system, for example. Instead, a native code can describe a program. As everyone knows, the class file which can be performed by the Java virtual machine (JVM) is included in a Java servelet. This is manageable with a servlet manager. The service thread with a servlet manager new occasionally which is the need is started, and this generates the new instance of a servlet. Three basic routines called an init() routine, a destroy() routine, and a service() routine are usually contained in each servlet. An init() routine offers initialization functionality. A servlet manager and other service functions are functions in which this can recognize a servlet and enables it to manage it. Although a destroy() routine cancels a servlet alternatively, this is actuation which is not typical. A service() routine offers the basic actuation functionality of a servlet. The flow chart of drawing 3 explains this actuation after this.

[0017] It is started at step 50 and this routine manages inspection of reception of a servlet of an electronic mail message. When an electronic mail message is received, this routine branches to step 52 and spawn(s) the instance of a servlet process. Then, it judges whether at step 54, the instance tests and an electronic mail has a file

attachment. When there is nothing, it is step 56, and a servlet process carries out log record of the received electronic mail, it is step 58 and transmits an electronic mail to an expected recipient's e-mail client. This is the usual electronic mail processing. However, when an electronic mail has an attachment, a servlet tests whether it branched to step 60 and all the attachments were processed. When that is right, the return of this routine is carried out. When the result of the test of step 60 is negation, a servlet instance obtains the following attachment at step 62. It judges whether the decision criterion to which it is made to run a test and an attachment is satisfied with step 64 of a given polish is associated. In order to judge whether the cache storage of the given file attachment is carried out according to this invention, a manager can define this polish, so that it may explain later. When not meeting the decision criterion as which the file attachment was specified from the result of the test of step 64 is shown, control returns to step 60 and tests an additional attachment. However, when the result of the test of step 64 is affirmation, a servlet instance processes an attachment in the following form.

[0018] At step 66, a servlet instance strips an attachment from an electronic mail, or it deletes in other forms. At step 68, a servlet compresses an attachment. Step 68 is option. The compressed attachment is stored in the given accessible location in a file space at step 70. Then, this routine is continued at step 72 and a servlet processes the permutation of reference to the deleted attachment and a given accessible location. It can follow, for example, an attachment can be permuted by the link to a storing location at step 72. In the desirable example, a link is referring to the HyperText Transfer Protocol (http) to the local file system with which the stored attachment becomes accessible in an electronic mail recipient to the center, or referring to the file transfer protocol (ftp). The electronic mail message containing "http://servernamelocalarchive.0434807.doc" in the reference which showed the electronic mail message which has an attachment to drawing 4 , and was permuted by it by drawing 5 , for example, a link, without an attachment is shown. As shown in drawing, this referring to the object is identified within a message, in order to direct the approach of obtaining the deleted attachment to a target recipient (namely, "Your attachment may be retrieved byclicking this link"). It can consider "refer to [of an alternative] the object" as a mere link, an image link including the thumbnail expression of an attachment or other convenient refer to the text, graphical reference, or other refer to the object.

[0019] A servlet routine supplies the electronic mail (namely, electronic mail deleted in the attachment) which was continued at step 74 and changed to an expected recipient. Therefore, at step 74, log record is carried out and the changed electronic mail is copied

to a client mail spool of an expected recipient. Then, control is returned to step 60. After processing all the attachments to a given electronic mail message in this form, the main processing loop formation is completed. A servlet instance is closed at step 76.

[0020] Drawing 6 is the flow chart showing how to judge whether a manager's polish is applied and a given decision criterion to carry out the cache storage of the file attachment is met. This is step 64 of the flow chart of drawing 3 . According to this invention, the decision criterion from which one or more differ can be tested. This routine is started at step 80 and a given polish tests whether the expected recipient (or group of the recipient who is the member in which an expected recipient has rating) is defined. When that is right, it continues to step 82 and this routine takes out the polish of a user proper (or group proper). This routine is continued to step 84 after that. This step is reached also when the result of the test of step 80 is negation. At step 84, this routine tests whether all the decision criteria defined by the polish were tested. When that is right, the return of this routine is carried out. When that is not right, it continues to step 86 and this routine takes out the following decision criterion. Then, it judges whether it tests at step 88 and a file attachment meets a decision criterion. It can follow, for example, it can be supposed that a file attachment has given size, that it is a given decision criterion a given MIME format, etc. When the result of the test of step 88 is affirmation, it continues, and this routine strips an attachment from a message, as the definition was given above. This is step 90. However, when a file attachment does not meet a given decision criterion, this routine returns to step 84 and obtains the next decision criterion of a polish. Processing is completed by this.

[0021] Drawing 7 is drawing which a manager can use and in which showing the simplified user interface, in order to generate the electronic mail file attachment cache storage polish by this invention. This interface is only a mere example. Two or more control which choosing in order to determine whether delete a given file attachment cuts is included in this. Following [for example,], one decision criterion is that a file attachment is larger than given size. This control checks the radio carbon button 91, and is chosen by inputting file size into the field 93. Another decision criterion is that a file attachment relates to the message addressed to many expected recipients from the given number. This control checks the radio carbon button 95, and is chosen by inputting the number of recipients into the field 97. Another decision criterion is that a message attachment has a given keyword in the title line. This control checks the radio carbon button 99, and is chosen by inputting a keyword into the field 101. Another decision criterion is that a message attachment has a given MIME type extension (for example, x-image/gif). This control checks the radio carbon button 103, and is chosen by

choosing a MIME type from a list box 105. The panel 107 for identifying the selection decision criterion of a user proper or a group proper is also contained in the user interface of drawing 7 . Therefore, for example, the attachment addressed to a certain user or the user group can follow, and can be specified about cache storage regardless of the property of the attachment.

[0022] This contractor will understand that control precise to the pan to cache storage processing can be brought about, combining the group of a decision criterion alternatively (using the group of a Boolean operator or a operator). It follows, for example, a manager is larger than given size (for example, 1MB), and can determine that he will carry out the cache storage only of the file attachment for the recipient exceeding a given number (for example, ten users). As another example, a manager is larger than given size and can determine that he will carry out the cache storage only of the attachment addressed to the user of its given post. Of course, an actual polish can be greatly changed so that it may be suitable for given system environment.

[0023] Drawing 8 is drawing showing the desirable routine which a target recipient uses for taking out the file attachment by which cache storage was carried out. This routine is step 100, and when opened by the electronic mail supplied to a recipient's e-mail client, it is started. It judges whether fetch of a file attachment by which the test was performed, the user was deleted before and cache storage was carried out at step 102 is desired. As annotated in the top, the message which directs the approach of taking out an attachment to a user can be inserted in an electronic mail with the reference to the location of the attachment in a file system tooth space. When the result of the test of step 102 is negation, the cycle of this routine is carried out. However, when a user chooses reference, such as carrying out activation of the link, it continues to step 104 and this routine takes out a file attachment. Then, it judges whether the test was performed at step 106 and it was stored in the form where the file attachment was compressed. When that is right, it continues to step 108, and this routine applies a given compression discharge routine, and obtains the original attachment. At step 110 which reaches also when the result of step 106 is negation, a file attachment can be returned to a target recipient and this recipient can open that attachment using a local resource. Processing is completed by this.

[0024] Although this invention was shown in the top in relation to the mail server which controls the group of an e-mail client, this is not the limit to this invention. Functionality of this invention can be carried out in every location in a network, and is not restricted to the use in the back of a fire wall like a typical system.

[0025] This contractor will understand that this invention brings about much profits to

the conventional technique. When the given electronic mail which has a file attachment targets two or more recipients, in the technique of this invention, it is necessary to make only one copy of the attachment. Storage areas required for a large electronic mail attachment are sharply reduced by this functionality. Furthermore, the technique of this invention offers the efficient method of posting a file attachment for easy fetch. Furthermore, when a file attachment is changed frequently, such modification can be posted at the network address of the same meaning. A user can receive a notice about the new version of the attachment which uses the same URL as what is contained in the electronic mail with which origin was changed. When a user chooses the URL (suppose that it is the same as that of URL of an old electronic mail), the attachment of a new version is supplied.

[0026] It may be desirable to store a file attachment in a central storage area, and to restrict access to these attachments to a given user with another deformation gestalt. In this form, a part of file attachment (or probably ********) is removed from arrival-of-the-mail mail, and fetch of these attachments addressed to these recipients is alternatively permitted to an expected recipient's given subset (minding an access control list).

[0027] As annotated too in the top, it may be desirable to compress a file attachment before storing. In performing this, before supplying an expected recipient, a compression discharge routine is used and it carries out compression discharge of the compressed attachment. This contractor will understand that it is desirable that a specific condensing routine and a specific compression discharge routine are complementary. This invention does not need to specify the specific condensing routine or specific compression discharge routine of a class.

[0028] As annotated in the top, as for above-mentioned functionality, it is desirable to carry out as an instruction set (program code) in the software which can be performed within a processor, i.e., the code module which resides in the random access memory of a computer permanently. An instruction set can be stored in memory (in order to use it with a floppy disk driving gear finally) which can be removed, such as another computer memory, for example, hard disk equipment, an optical disk, or a floppy disk, or can be downloaded through the Internet or other computer networks until it is required by computer (since it is finally used by CD-ROM).

[0029] Furthermore, this contractor will understand that they can be performed with the equipment by which reliance specialization was constituted and carried out as they perform hardware, firmware, or a required approach step for such an approach although explained various approaches are alternatively enforced conveniently by

activation or the general purpose computer reconfigurated by software.

[0030] Furthermore, the web "a client" used on these specifications must be interpreted by the wide sense as what is connected to computer networks, such as the Internet, directly or indirectly in the form developed known or from now on, or means all connectable computers or the component of those. A vocabulary web "a server" must be interpreted by the wide sense as what means the accessories or these components of a computer, a computer platform, a computer, or a platform. Of course, a "client" must be interpreted by the wide sense as what means what requires or acquires a file, and a "server" is a stereo which downloads a file.

[0031] As a conclusion, the following matters are indicated about the configuration of this invention.

[0032] (1) Are the distribution approach of an electronic mail attachment and answer the demand which transmits an electronic mail to an unit or two or more recipients. In order to make the step which analyzes said electronic mail about an attachment, the step which removes said attachment and is stored in a given accessible location when said electronic mail contains an attachment, and the changed electronic mail The step which permutes the reference to said attachment within said electronic mail, and the step which transmits said changed electronic mail to said unit or two or more recipients, The distribution approach which answers a demand from the recipient who uses said reference supplied within said changed electronic mail, and contains the step which supplies said attachment.

(2) An approach given in the above (1) said whose reference is a link.

(3) An approach given in the above (1) said whose reference contains the in-line image of said attachment.

(4) An approach given in the above (1) which contains further the step which judges whether said attachment meets a given decision criterion before removing and storing said attachment.

(5) An approach given in the above (4) which is that the number of the recipients about said electronic mail with which said given decision criterion contains said attachment exceeds a given number.

(6) An approach given in the above (4) said whose given decision criterion is that the size of said attachment exceeds a given value.

(7) An approach given in the above (4) said whose given decision criterion is that said attachment has a given title.

(8) An approach given in the above (4) said whose given decision criterion is that said attachment is having the given keyword associated.

(9) Are the distribution approach of an electronic mail attachment and answer the demand which transmits an electronic mail to an unit or two or more recipients. The step which analyzes said electronic mail about an attachment, and the step which judges whether said attachment meets a given decision criterion when said electronic mail contains an attachment, When said electronic mail attachment meets said given decision criterion, in order to make the step which removes said attachment and is stored in a given accessible location, and the changed electronic mail The distribution approach which contains the step which permutes the reference to said attachment, and the step which transmits said changed electronic mail to said unit or two or more recipients within said electronic mail.

(10) An approach given in the above (9) which answers a demand from the recipient who uses said reference supplied within said changed electronic mail, and contains further the step which supplies said attachment.

(11) An approach given in the above (9) said whose reference is a link.

(12) An approach given in the above (9) said whose reference contains the in-line image of said attachment.

(13) An approach given in the above (9) which is that the number of the recipients about said electronic mail with which said given decision criterion contains said attachment exceeds a given number.

(14) An approach given in the above (9) said whose given decision criterion is that the size of said attachment exceeds a given value.

(15) An approach given in the above (9) said whose given decision criterion is that said attachment has a given title.

(16) An approach given in the above (9) said whose given decision criterion is that said attachment has given distribution priority.

It is a server for distributing an electronic mail attachment. (17) A processor, Said electronic mail distribution application answers the demand which transmits an electronic mail to an unit or two or more recipients including the storage which has a given accessible location, and electronic mail distribution application. In order to make the means for analyzing said electronic mail about an attachment, the means for removing said attachment and storing in said given accessible location, and the changed electronic mail The means for permuting the reference to said attachment, and the means for transmitting said changed electronic mail to said unit or two or more recipients, The server which answers a demand from the recipient who uses said reference supplied within said changed electronic mail, and includes the means for supplying said attachment.

(18) A server given in the above (17) said whose electronic mail distribution application includes the means for judging further whether said attachment meets a given decision criterion.

(19) The number of the recipients of said electronic mail with which said given decision criterion essentially contains said attachment exceeds a given number, Said attachment has [that the size of said attachment exceeds a given value, and] a given title, A server given in the above (18) chosen from the group of the decision conditions which consist of that said attachment has given distribution priority, that said attachment relates to a given keyword, a user identification, user group discernment, and combination of these decision conditions.

(20) Answer the demand which transmits an electronic mail to an unit or two or more recipients. In order to make the means for analyzing said electronic mail about an attachment, the means for removing said attachment and storing in said given accessible location, and the changed electronic mail The means for permuting the reference to said attachment, and the means for transmitting said changed electronic mail to said unit or two or more recipients, The computer program product in a computer-readable medium for distributing an electronic mail attachment which answers a demand from the recipient who uses said reference supplied within said changed electronic mail, and includes the means for supplying said attachment.

(21) A computer program product given in the above (20) which includes further the means for judging whether said attachment meets a given decision criterion.

(22) The number of the recipients of said electronic mail with which said given decision criterion essentially contains said attachment exceeds a given number, Said attachment has [that the size of said attachment exceeds a given value, and] a given title, Said attachment relates [that said attachment has given distribution priority and] to a given keyword, A computer program product given in the above (20) chosen from the group of the decision conditions which consist of a user identification, user group discernment, and combination of these decision conditions.

(23) Are the distribution approach of an electronic mail attachment and answer the demand which transmits an electronic mail to an unit or two or more recipients. The step which analyzes said electronic mail about an attachment, and the step which removes said attachment when said electronic mail contains an attachment, In order to make the step which compresses said attachment and stores said compressed attachment in a given accessible location, and the changed electronic mail The distribution approach which contains the step which permutes the link to said attachment, and the step which transmits said changed electronic mail to said unit or

two or more recipients within said electronic mail.

(24) An approach given in the above (23) which answers selection of said link by the recipient of said changed electronic mail, and contains further the step which takes out said compressed attachment, the step which applies a given compression discharge routine to said compressed attachment, and the step which supplies said attachment.

It is the electronic mail attachment transmitting approach from a transmitting person to the group of said unit or two or more recipients. (25) By the email server The step which answers the reception of an electronic mail which has an attachment and removes said attachment, With the message which notifies a recipient of the ability of said attachment to be taken out by selection of the step which stores said attachment in given URL, the link which identifies said URL, and said link The transmitting approach containing the step which transmits said electronic mail without said attachment to the group of an unit or two or more recipients.

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CLAIMS

[Claim(s)]

[Claim 1] Are the distribution approach of an electronic mail attachment and the demand which transmits an electronic mail to an unit or two or more recipients is answered. In order to make the step which analyzes said electronic mail about an attachment, the step which removes said attachment and is stored in a given accessible location when said electronic mail contains an attachment, and the changed electronic mail The step which permutes the reference to said attachment within said electronic mail, and the step which transmits said changed electronic mail to said unit or two or more recipients, The distribution approach which answers a demand from the recipient who uses said reference supplied within said changed electronic mail, and contains the step which supplies said attachment.

[Claim 2] The approach according to claim 1 said reference is a link.

[Claim 3] The approach according to claim 1 said reference contains the in-line image of said attachment.

[Claim 4] The approach according to claim 1 of containing further the step which judges whether said attachment meets a given decision criterion before removing and storing said attachment.

[Claim 5] The approach according to claim 4 of being that the number of the recipients about said electronic mail with which said given decision criterion contains said attachment exceeds a given number.

[Claim 6] The approach according to claim 4 said given decision criterion is that the size of said attachment exceeds a given value.

[Claim 7] The approach according to claim 4 said given decision criterion is that said attachment has a given title.

[Claim 8] The approach according to claim 4 said given decision criterion is that said attachment is having the given keyword associated.

[Claim 9] Are the distribution approach of an electronic mail attachment and the demand which transmits an electronic mail to an unit or two or more recipients is answered. The step which analyzes said electronic mail about an attachment, and the step which judges whether said attachment meets a given decision criterion when said electronic mail contains an attachment, When said electronic mail attachment meets said given decision criterion, in order to make the step which removes said attachment and is stored in a given accessible location, and the changed electronic mail The distribution approach which contains the step which permutes the reference to said attachment, and the step which transmits said changed electronic mail to said unit or two or more recipients within said electronic mail.

[Claim 10] The approach according to claim 9 of answering a demand from the recipient who uses said reference supplied within said changed electronic mail, and containing further the step which supplies said attachment.

[Claim 11] The approach according to claim 9 said reference is a link.

[Claim 12] The approach according to claim 9 said reference contains the in-line image of said attachment.

[Claim 13] The approach according to claim 9 of being that the number of the recipients about said electronic mail with which said given decision criterion contains said attachment exceeds a given number.

[Claim 14] The approach according to claim 9 said given decision criterion is that the size of said attachment exceeds a given value.

[Claim 15] The approach according to claim 9 said given decision criterion is that said attachment has a given title.

[Claim 16] The approach according to claim 9 said given decision criterion is that said attachment has given distribution priority.

[Claim 17] It is a server for distributing an electronic mail attachment. A processor, Said electronic mail distribution application answers the demand which transmits an electronic mail to an unit or two or more recipients including the storage which has a given accessible location, and electronic mail distribution application. In order to make the means for analyzing said electronic mail about an attachment, the means for removing said attachment and storing in said given accessible location, and the changed electronic mail The means for permuting the reference to said attachment, and the means for transmitting said changed electronic mail to said unit or two or more recipients, The server which answers a demand from the recipient who uses said reference supplied within said changed electronic mail, and includes the means for supplying said attachment.

[Claim 18] The server according to claim 17 in which said electronic mail distribution application includes the means for judging further whether said attachment meets a given decision criterion.

[Claim 19] The number of the recipients of said electronic mail with which said given decision criterion essentially contains said attachment exceeds a given number, Said attachment has [that the size of said attachment exceeds a given value, and] a given title, The server according to claim 18 chosen from the group of the decision conditions which consist of that said attachment has given distribution priority, that said attachment relates to a given keyword, a user identification, user group discernment, and combination of these decision conditions.

[Claim 20] The means for answering the demand which transmits an electronic mail to an unit or two or more recipients, and analyzing said electronic mail about an attachment, In order to make the means for removing said attachment and storing in said given accessible location, and the changed electronic mail The means for permuting the reference to said attachment, and the means for transmitting said changed electronic mail to said unit or two or more recipients, The computer program product in a computer-readable medium for distributing an electronic mail attachment which answers a demand from the recipient who uses said reference supplied within said changed electronic mail, and includes the means for supplying said attachment.

[Claim 21] The computer program product according to claim 20 which includes further the means for judging whether said attachment meets a given decision criterion.

[Claim 22] The number of the recipients of said electronic mail with which said given decision criterion essentially contains said attachment exceeds a given number, Said attachment has [that the size of said attachment exceeds a given value, and] a given title, The computer program product according to claim 20 chosen from the group of the decision conditions which consist of that said attachment has given distribution priority, that said attachment relates to a given keyword, a user identification, user group discernment, and combination of these decision conditions.

[Claim 23] Are the distribution approach of an electronic mail attachment and the demand which transmits an electronic mail to an unit or two or more recipients is answered. The step which analyzes said electronic mail about an attachment, and the step which removes said attachment when said electronic mail contains an attachment, In order to make the step which compresses said attachment and stores said compressed attachment in a given accessible location, and the changed electronic mail The distribution approach which contains the step which permutes the link to said attachment, and the step which transmits said changed electronic mail to said unit or

two or more recipients within said electronic mail.

[Claim 24] The approach according to claim 23 of answering selection of said link by the recipient of said changed electronic mail, and containing further the step which takes out said compressed attachment, the step which applies a given compression discharge routine to said compressed attachment, and the step which supplies said attachment.

[Claim 25] It is the electronic mail attachment transmitting approach from a transmitting person to the group of said unit or two or more recipients. By the email server The step which answers the reception of an electronic mail which has an attachment and removes said attachment, With the message which notifies a recipient of the ability of said attachment to be taken out by selection of the step which stores said attachment in given URL, the link which identifies said URL, and said link The transmitting approach containing the step which transmits said electronic mail without said attachment to the group of an unit or two or more recipients.

[Translation done.]